QUALITY CONTROL (QC) AND
INDEPENDENT TECHNICAL REVIEW (ITR) PLAN

1.0 PURPOSE

This review plan presents the process that assures quality products for the Hudson-Raritan Estuary (HRE), NY & NJ, ecosystem restoration feasibility study. This QC and ITR plan defines the responsibilities and roles of each member on the study and technical review team.

The product to be reviewed by the technical review team is the HRE Feasibility Report, including the Comprehensive Restoration Plan. Under the provisions of new U.S. Army Corps of Engineers (USACE) policy, as detailed in EC1105-2-408 dated May 31, 2005, the ITR will be conducted by specialists from organizations outside of the district responsible for the study. ITR will be conducted for all decision documents and will be independent of the technical production of the project. This QC and ITR plan is, by reference, a part of the project management plan for this master plan.

2.0 APPLICABILITY

This document provides the quality control plan for the HRE Feasibility Report. It identifies quality control processes and independent technical review for all work to be conducted under this study authority, including in-house, sponsor and contract work.

3.0 REFERENCES

EC 1105-2-408 “Peer Review of Decision Documents” (May 31, 2005)
EC 1105-2-407 “Planning Models Improvement Program: Model Certification” (May 31, 2005)
EC 1105-2-409 “Planning in a Collaborative Environment” (May 31, 2005)
ER 1105-2-100 “Planning Guidance Notebook and Appendices”

4.0 GENERAL PROJECT DESCRIPTION

The Hudson-Raritan Estuary (HRE), of New York and New Jersey, is one of the largest estuaries (and it is nationally significant under the National Estuary Program) on the east coast, and its shoreline was once lined with a mosaic of ecologically valuable aquatic and adjacent terrestrial habitats that supported diverse fish and wildlife populations. Although the entire HRE covers more than 16,000 square miles, the USACE study area within HRE is demarcated by a 25 mile radius from the Statue of Liberty, commensurate with the Port District.

The major environmental problems in the HRE are extensive habitat loss and degradation that have reduced the quantity, diversity, functional and structural integrity of the overall HRE ecosystem. These environmental problems are due to the direct and indirect impacts of urban coastal development in the Port District. Development induced impacts on the environment include: modifications to the natural hydrologic regime, the creation of fast land in former aquatic/wetland habitats, shoreline hardening, contaminant inputs to water and sediment, and the overall increase in impervious area throughout the watershed. Adverse impacts on aquatic habitats have been exacerbated by the degradation of water and sediment quality resulting from extensive pollution loading, and from reduced flow and flushing rates in many areas. Populations of fish, shellfish, and fish eating birds have been severely reduced through the combined impacts of habitat loss and system-wide degradation. In effect, water resources problems focus on potential threats to human health and loss of sustainable ecosystem services, and these overarching problems manifest themselves through the aforementioned degradation factors.

A reconnaissance study was authorized by a resolution of the Committee on Transportation and Infrastructure of the United States House of Representatives, adopted 15 April 1999, to determine the feasibility of environmental restoration and protection related to water resources and sediment quality within the New York and New Jersey Port District, including but not limited to creation, enhancement, and restoration of aquatic, wetland, and adjacent upland habitats. Engineering solutions are available to meet ecosystem restoration goals and objectives, such as improvements in fish and wildlife habitat values.

On 12 July 2001, the Feasibility Cost Sharing Agreement (FCSA) was executed with the Port Authority of New York and New Jersey (PANYNJ), the non-Federal sponsor. The feasibility study has been initiated and is underway. Currently, the Corps and the Port Authority of NY & NJ, are working with the Harbor Estuary Program (HEP), Hudson River Foundation (HRF), resource agencies, local governments and stakeholders to develop a Comprehensive Restoration Plan (CRP), which is a watershed plan that goes beyond the traditional Corps scope to discuss all possible restoration measures in the estuary, and sets forth the scientific model, or applied Target Ecosystem Characteristics (TEC), for quantifying the problems, the goals, and progress towards meeting these goals. Valuable ecosystem services to attain environmental quality, social well being and economic benefits must be assessed. The USACE HRE Feasibility Report deals with the subset of restoration measures in the CRP that fall under Corps authority for implementation.

5.0 REVIEW REQUIREMENTS

Initial Quality Control (QC) review will be handled within the Section or Branch performing the work. Additional QC will be performed by the Project Delivery Team (PDT) during the course of completing the integrated Feasibility Study. The detailed checks of computations and methodology should be performed at the District level, and the processes for this level of review are well established. Pursuant to EC 1105-2-408, item 2 c (2), Models used in the preparation of decision documents covered by this Circular will be reviewed in accordance with EC 1105-2-407, Planning Models Improvement Program: Model Certification. The uses and applications of models in individual studies that lead to the preparation of decision documents covered by this Circular will be reviewed in accordance with the requirements of this Circular. At this point the environmental assessment tools being contemplated are evaluation methods based on the TECs,

which are under development by the non-profit entity, the Hudson River Foundation, in conjunction with academic authorities, resource agencies and stakeholders.

Pursuant to EC 1105-2-408, the Feasibility Report and EIS will need an ITR team endorsed by the Planning Center of Expertise (PCX) for Environmental Restoration (National Ecosystem Planning) Projects. Dr. David Vigh (CEMVD-RB-T) will validate the assignment of this team. It is anticipated that an ITR and External Peer Review (EPR) will be necessary, based upon the initial Risk Screening Process conducted by the PDT noted in Section 9. The review process will focus on:

- Review of the planning process and criteria applied.
- Review of the methods of preliminary analysis and design.
- Compliance with authority and NEPA requirements.
- Completeness of preliminary support documents.
- Spot checks for interdisciplinary coordination.

6.0 REVIEW PROCESS

It is anticipated that the ITR review process will begin after the ITR team has been assigned, and will cover key formulation and benefit and cost assessment areas. Major review process milestones are listed below:

- HRE Technical White Paper & TEC Report
- Draft CRP Report & Atlas of Restoration Opportunities review
- Alternative Formulation Briefing
- Draft Feasibility Report & Programmatic EIS Review (includes Revised CRP)
- Final Feasibility Report & Programmatic EIS Review (includes Final CRP)

7.0 REVIEW COST

The cost of the ITR and EPR are to be determined between the team and the PCX. It is assumed that documents to be reviewed will be transmitted electronically via the ftp site. Comments will be made and addressed in Dr. Checks. It is also assumed that the external ITR team will be working virtually. Only under extreme circumstances should the external ITR team, or a representative of that team, be required to physically attend team or milestone meetings. The team should participate in all remaining milestone meetings; however, via conference call or video teleconference as warranted to improve efficiency.

8.0 REVIEW SCHEDULE

Note that since the commencement of this study preceded the requirement for PCX involvement and development of this review plan, the review schedule below is tailored to work remaining to be completed:

TASK	START DATE	FINISH DATE
*Develop ITR Plan and post to Web Site, PCX	June 2007	June 2007
*Identify Regional ITR resources and Recommend ITR Plan to PCX	July 2007	
*PCX Approves or Assigns ITR Team	July 2007	
*Sponsor Approves QC/ITR Plan	Aug 2007	
*HRE Technical White Paper & TEC Report to PCX	TBD	
*Revised HRE Technical White Paper & TEC Report to Vertical Team	TBD	
*Draft CRP Report & Restoration Atlas to PCX, External ITR	TBD	
*Draft CRP Report & Restoration Atlas to Vertical Team	TBD	
*Review of TEC Model/Certification	TBD	
*District evaluations of USACE restoration sites per approved model	TBD	
*Alternative Formulation Briefing	TBD	
*AFB → External Peer Review	TBD	
*Review Draft FR/PEIS/Revised CRP External ITR/EPR	TBD	
*Review of Final FR/PEIS/CRP	TBD	

9.0 PROJECT RISK

The PDT has completed an initial risk assessment associated with this project based upon five factors and rated the project quantitatively among five levels of project risk of failure ranging from low to high (risk score class). The PDT scored each Project Risk Item in the Review Plan Score Guide (Table 9.1) and calculated an overall Average Project Risk Assessment Score. The exact value of the scores were not as important as compared to what risk score class (low, medium or high) the Average Project Risk Assessment Score was classified. Based upon the PDT analysis, the project is moderate to high in risk due to its scale and complexity.

The PDT considered previous District project experience when making this analysis. No attempt was made to tie this to a national scale of rating. The Project Schedule and Cost were assessed as a low degree of risk if they both remained flexible and a high degree of risk if the Project schedule and cost was fixed. Staff Technical Experience was assessed as a low degree of risk if the staff had a high level of ecosystem restoration experience and a high degree of risk if the staff had a low level of ecosystem restoration experience. The results of the evaluation are tabulated as follows:

Table 9.1 Review Plan Score Guide

Project Risk Item	**Risk Assessment Score (Low Degree to High Degree)**					**Score**
	Low		Medium		High	
Project Complexity	1	2	3	4	5	5
Customer Expectations	1	2	3	4	5	5
Product Schedule/Cost	1	2	3	4	5	5
Staff Technical Experience	1	2	3	4	5	4
Failure Impact and Consequences	1	2	3	4	5	3
Average Project Risk Assessment Score						**4.4 (Medium-High)**

10.0 REVIEW PLAN

The components of the review plan were developed pursuant to the requirements of EC1105-2-408.

10.1 Team Information

The decision document that will be the ultimate focus of the peer review process is the HRE Feasibility Report, which will contain the HRE Comprehensive Restoration Plan as the watershed report. The purpose of the decision document and associated Programmatic EIS will be to guide the Corps' efforts to restore habitat for the development and protection of valuable habitats in the Hudson-Raritan Estuary. The project team is listed below. This list provides the points of contact of NAN team members who are available to answer specific technical questions as part of the review process. The list also provides the names and organization of participating outside entities.

District Project Team Members:

MAIN REPORT PRODUCT	STUDY TEAM MEMBERS	REVIEW TEAM MEMBER
Feasibility Report Main Text	Project Planner CENAN-PL-F	All review team members will review this document internally External ITR: TBD
NEPA Documentation	CENAN-PL-E	All review team members will review this document internally External ITR: TBD

Sections	STUDY TEAM MEMBER	REVIEW TEAM MEMBER
Plan Formulation	CENAN-PL-F	TBD – PCX
Economics	CENAN-PL-F	TBD – PCX
Environmental	CENAN-PL-E	TBD – PCX
Cultural Resources	CENAN-PL-E	TBD – PCX
Real Estate	CENAN-RE	TBD – PCX
Hydrology and Hydraulics	CENAN-EN	TBD – PCX
Geotechnical	CENAN-EN	TBD – PCX
HTRW	CENAN-PL-E	TBD – PCX
GIS	CENAN-PL-E	TBD – PCX
Counsel	CENAN-OC	TBD - PCX

10.2 Scientific Information
Based upon the self evaluation by the project team, it is possible that the USACE report to be disseminated will contain influential scientific information. Influential scientific information is defined by the Office of Management Budget as scientific information the agency reasonably can determine will have or does have a clear and substantial impact on important public policies or private sector decisions. The environmental restoration measures that were identified will be evaluated using standard and innovative biological and economic measurement processes.

10.3 Timing
The ITR process will begin with an assessment of the HRE Technical White Paper and Target Ecosystem Characteristics Report. It is anticipated that work would start upon sponsor approval.

10.4 External Peer Review Process
Due to the complexity, scale, and potential for influential or innovative analyses, it is anticipated that external peer review would be required.

10.5 Public Comment
Public involvement is anticipated during the outreach phase starting with the release of the draft CRP Report and Atlas of Restoration Opportunities, and in the outreach period between the draft and final Feasibility Report and Programmatic EIS. Further public involvement activities have not been scheduled at this time.

10.6 ITR Reviewers [This will be updated based on project team and MVD negotiations.]
It is anticipated that at least seven reviewers total should be available in the following disciplines: hydraulics, water quality, HTRW, economics, ecology, planning, and cost estimating. The reviewer contact information should be stated in Section 10.1 of this review plan. Cost Estimating - as required by HQUSACE, the review will be conducted by Cost Estimating Center of Expertise (NWW).

10.7 External Peer Review Selection
This will be determined conclusively in conjunction with the PCX and vertical team.